

AMENDMENTS TO THE CLAIMS

Claim 1 (Withdrawn): A method of making a high-cleanliness steel excellent in cold workability and fatigue characteristic, said method comprising

adding a Li-containing substance selected from the group consisting of a Li-Si alloy, Li_2CO_3 , and a combination thereof, having a Li content between 20 and 40% by mass, to a molten steel; and

producing the steel of Claim 8.

Claim 2 (Withdrawn): The method of making a high-cleanliness steel according to claim 1, characterized by adding a substance containing at least one of Ca, Mg, Na and K to the molten steel in addition to the Li-containing substance.

Claim 3 (Withdrawn): The method of making a high-cleanliness steel according to claim 1, characterized by adding the Li-containing substance to the molten steel after the completion of a series of operations of a ladle refining process including composition adjustment, temperature adjustment and slag refining to control the composition of the molten steel such that the steel has a total-Li content between 0.020 and 9 ppm by mass and contains 1.0 or below of oxide inclusion particles having a major diameter of 20 μm or above in 50 g of the steel.

Claim 4 (Withdrawn): The method of making a high-cleanliness steel according to claim 1, characterized by adding the Li-containing substance at a final stage of a series of operations of a ladle refining process including composition adjustment, temperature adjustment and slag refining such that an oxide inclusion contained in the steel has a CaO content between 15 and 55% by mass, a SiO₂ content between 20 and 70% by mass, an Al₂O₃ content of 35% by mass or below, a MgO content of 20% by mass or below and a Li₂O content between 0.5 and 20% by mass.

Claim 5 (Withdrawn): The method of making a high-cleanliness steel according to claim 1, characterized by adding the Li-containing substance to the molten steel contained in at least one of a ladle, a tundish for continuous casting, and a mold for continuous casting.

Claim 6 (Withdrawn): The method of making a high-cleanliness steel according to claim 1, characterized by adding the Li-containing substance to the molten steel by stirring the molten steel with iron tubular wires containing the Li-containing substance.

Claim 7 (Withdrawn): The method of making a high-cleanliness steel according to claim 1, characterized by adding the Li-containing substance to the molten steel by blowing an inert gas carrying the Li-containing substance into the molten steel.

Claim 8 (Previously Presented): A high-cleanliness steel having a total-Li content between 0.020 and 9 ppm by mass and containing 1.0 or below of oxide inclusion particles having a major diameter of 20 μm or above in 50 g of the steel.

Claim 9 (Previously Presented): The high-cleanliness steel according to claim 8, wherein the total-Li/Si mass ratio representing the ratio in mass of the total amount of Li contained in the steel to the amount of Si contained in the steel is between 1×10^{-6} and 1000×10^{-6} .

Claim 10 (Previously Presented): The high-cleanliness steel according to claim 8, wherein each of the oxide inclusion particles has a CaO content between 15 and 55% by mass, a SiO_2 content between 20 and 70% by mass, an Al_2O_3 content of 35% by mass or below, a MgO content of 20% by mass or below and a Li_2O content between 0.5 and 20% by mass.

Claim 11 (Previously Presented): The high-cleanliness steel according to claim 10, wherein each of the oxide inclusion particles has a $\text{Li}_2\text{O}/\text{SiO}_2$ mass ratio between 0.01 and 0.5.

Claim 12 (Previously Presented): The high-cleanliness steel according to claim 10, wherein each of the oxide inclusion particles has a SiO_2 content of 30% by mass or above and below 45% by mass.

Claim 13 (Previously Presented): The high-cleanliness steel according to claim 10, wherein each of the oxide inclusion particles contains Na_2O and/or K_2O and the sum of Li_2O content, Na_2O content and K_2O content is between 0.5 and 20% by mass.

Claim 14 (Previously Presented): The high-cleanliness steel according to claim 8, wherein the steel has a C content of 1.2% by mass or below, a Si content between 0.1 and 4% by mass, a Mn content between 0.1 and 2.0% by mass, and an Al content of 0.01% by mass or below.

Claim 15 (Original): The high-cleanliness steel according to claim 14, wherein the steel has an O content of 0.005% by mass or below, a total-Mg content between 0.1 and 15 ppm by mass and a total-Ca content between 0.1 and 40 ppm by mass.

Claim 16 (Previously Presented): The high-cleanliness steel according to claim 14, wherein the steel contains at least one of Cr, Ni, V, Nb, W, Cu and Ti.

Claim 17 (Previously Presented): The high-cleanliness steel according to claim 14, wherein the other elements of the steel are Fe and unavoidable impurities.

Claim 18 (Previously Presented): The high-cleanliness steel according to claim 15, wherein the steel contains at least one of Cr, Ni, V, Nb, W, Cu and Ti.

Claim 19 (Previously Presented): The high-cleanliness steel according to claim 15, wherein the other elements of the steel are Fe and unavoidable impurities.

Claim 20 (Previously Presented): The high-cleanliness steel according to claim 16, wherein the other elements of the steel are Fe and unavoidable impurities.

Claim 21 (Previously Presented): The high-cleanliness steel according to claim 8, wherein the steel has a total-Li content between 0.020 and 6 ppm by mass.